EXCELL MCDS SERIES

EXCELL with MCDS System is a new generation of electrosurgical units for high surgery, developed utilizing the most advanced digital technology with double microprocessor to grant the highest possible level of performances and safety of users and patients.
Suitable for every surgical monopolar and bipolar application, the EXCELL MCDS line meets the International Standards IEC 60601-2-2 for HF diathermy units, has EC approval 93/42 ECC and includes 4 different models: EXCELL 400 MCDS, EXCELL 350 MCDS, EXCELL 250 MCDS and EXCELL 200 MCDS allowing the user to choose the most suitable model for his specific need.

PERFORMANCES

Thirteen different currents to meet every need:

- four for monopolar cut
- four for monopolar coagulation
- two for bipolar cut (only for models 400 MCDS and 250 MCDS)
- three for bipolar coagulation

The monopolar and bipolar performances can be used independently and all units can be used with argon coagulators.

Monopolar cut

Four currents all with sinusoidal wave form and electronically controlled starting impulse to grant the best performance for every surgical procedure, under water too (TUR, TUVAP, and so on).
The four currents are:

- PC - pure cut
- BC I - blend cut with a minimum haemostatic effect and modulated combination of cut and coagulation currents
- BC II - blend cut with a medium haemostatic effect and modulated combination of cut and coagulation currents
- BC III - blend cut with a strong haemostatic effect spray type and modulated combination of cut and coagulation currents.

Monopolar coagulation

Four currents, all with automatic optimization system, ensure the best results for the coagulating action with the lowest possible power in every surgical field, under water too.
The four currents are:

- PCS - Pin Point Contact, Soft: coagulation extremely precise, with a minimum superficial effect and good deep action
- F - Fulguration: coagulation with good superficial effect and deep action
- SPR - Spray: coagulation without contact, with strong superficial effect and light deep action
- A - Automatic: coagulation with pulsed action to obtain the most delicate effect

This function is particularly suitable for laparoscopic procedures, reducing the undesired "smoking effect".

Bipolar cut

Two currents for the bipolar cut:

- PC - pure cut with a minimum coagulating effect
- BC - blend cut with a strong coagulating effect.

Bipolar coagulation

Three currents for the bipolar coagulation to satisfy every specific need.
The three currents are:

- MP - Micro Precise: coagulation extremely precise
- MPA - Micro Precise Automatic: coagulation identical to the MP type but with an automatic Start/Stop system (impedance sensitive)
- SM - Standard Macro: coagulation with a strong effect, for forceps with larger tips (the best for laparoscopy).

ACTIVATION SYSTEMS

All units can be used and operate independently as follows:

- EXCELL 400 MCDS and EXCELL 250 MCDS with:
  - Two double pedal switches for monopolar and bipolar functions:
  - Two monopolar hand-switch handles or one with hand-switch and one with double pedal-switch, all usable independently by two surgeons.
  - Bipolar electrode with double pedal-switch or with automatic Start/Stop system (for coagulation only).
- EXCELL 350 MCDS and 200 MCDS with:
  - a double pedal switch which can be used for the monopolar and bipolar functions
  - one hand-switch handle and one with double pedal-switch usable independently by two surgeons
  - bipolar electrode with pedal switch or with automatic Start/Stop system (for coagulation only).

GENERAL CONTROL - *MCDS System*

All models are provided with a sophisticated and advanced control system by double microprocessor including an autodiagnosis system both switching on the unit and during its working, that monitories continuously all functioning parameters to grant the highest level of performances and safety.
This system, in case of faults, stops automatically the working of the unit informing the users through specific "error" codes on the display.
The system grants all the following performances:

- **Automatic adjustment of output powers with dynamic control and stop in case of anomalies -ADC System with Output Error Control:**
  All output powers are controlled by two microprocessors which adjust and optimize them automatically, carrying out 7000 tests every second and granting so, without intervention by the user, an efficacious and dynamic stabilization of the output power in order to obtain the maximum efficiency with the lowest possible power in every surgical field, independent of the patient tissues (impedances), the electrode used and its speed on the tissues.This system grants also the maximum safety because it is able to stop, in real time, the output power in case of internal faults.
- **Funtions setting:**
  The setting and the adjustment of all the controls are on the front panel. This is organically divided, completely smooth and it is provided with a buttons-system with control display that allows a micro adjustment for the low powers (1 W at a time for monopolar and 0.5 W at a time for bipolar performances).
- **Memorization**
  The user can personalize exactly specific performances memorizing 4 working programs which can be set by pushing a button.
- **Neutral plate safety circuit - NPCC System**
  This circuit allows to obtain very high level of safety controlling both the good connection and the quality of the contact "neutral plate/tissues" (using specific disposable split electrodes). It works as follows:
  a) When the contact is defective, it gives to the users a luminous signal reducing at the same time the output power at 200 W safety level.
  b) It stops completely the output power, giving an acoustic and luminous signal when the contact is insufficient, absent or the connection cable is broken or disconnected.
  The efficiency of this circuit is tested both during the initial autodiagnosis routine and during working with cyclical tests.
- **Leakege currents circuit control**
  The system checks the HF leakage currents and, if there are any load unmatching impedances (patient), reduces automatically the output RMS voltage to safety levels.

CONSTRUCTIONAL TECHNOLOGY

To guarantee the maximum reliability and solidity without any heating problem, the apparatus has been developed using the most modern technology for this kind of application and it is provided of HF generator with mosfet power working according to the principle of free oscillators.
To make easier the technical assistance, the unit is built with interchangeable boards and it is subjected to a very severe testing procedures including also 100 hours of working at maximum power.

Technical features	EXCELL 400 MCDS	EXCELL 350 MCDS	EXCELL 250 MCDS	EXCELL 200 MCDS
Electronic generator: meets IEC 601-1 and IEC 60601-2-2 III Edition EC Approval 93/42 EEC	App: 187/MDD IMQ 0051	App: 187/MDD IMQ 0051	App: 187/MDD IMQ 0051	App: 187/MDD IMQ 0051
Classification and type: I-CF leakages on the patient less than 10 µA	•	•	•	•
Output circuit: floating - protected against the use of defibrillator - HF leakage less than 150mA	•	•	•	•
Mains and absorption	V 230/110 Hz 50/60 800 VA	V 230/110 Hz 50/60 800 VA	V 230/110 Hz 50/60 800 VA	V 230/110 Hz 50/60 800 VA
Cooling: convection without fan	•	•	•	•
Working frequency monopolar and bipolar	475 kHz	475 kHz	475 kHz	475 kHz
Adjusting powers: by push-buttons with low and fast changing - display read out	•	•	•	•
Control system:*MCDS System* by two microprocessors with autodiagnosis (both switching on and during the working) and stop in case of fault with error code	MCDS System	MCDS System	MCDS System	MCDS System
Adjustment of output power: *ADC System* with *Output Error Control* automatic adjustment and real time dynamic control (7000 tests/s) by microprocessor and stop in case of faults	ADC System with Output Error Control	ADC System with Output Error Control	ADC System with Output Error Control	ADC System with Output Error Control
Functioning memorization: four programs with selection by push button	•	•	•	•
HF leakage current control: by microprocessor with automatic decrease of RMS voltage	•	•	•	•
Neutral plate safety *NPCC System* by microprocessor with control of both connections and electrode/tissue contact with: - luminous signal and decrease of output power (in case of defective contact, about 75%); - luminous and acoustic signal with stop of output power (in case of insufficient, about 50%, or absent contact)	NPCC System	NPCC System	NPCC System	NPCC System
Acoustic and luminous signals: cut (low sound, yellow light), coag. (high sound, blue light). Neutral plate alarm (strong, intermittent sound, red light).	•	•	•	•
Facility to use gas argon coagulator	•	•	•	•
Dimensions and Weight (L x W x H):	cm 35x38x15 kg 15	cm 35x38x15 kg 15	cm 35x38x15 kg 15	cm 35x38x15 kg 15
Use				
Two monopolar hand-switch handles or one with hand-switch and one with foot-switch, all usable independently by two surgeons. One independent bipolar electrode, usable by fott-switch or automatic start/stop system (MPA coag ONLY) with adjustable delay. Two double foot-switches, one for monopolar use and one for bipolar use.	•		•	
One monopolar hand-switch handle and one with foot-switch, all usable independently by two surgeons. One independent bipolar electrode, usable by foot-switch or automatic start/stop system (MPA coag ONLY) with adjustable delay. One double foot-switch for monopolar or bipolar use.		•		•

OUTPUT POWERS, OPEN CIRCUIT PEAK TO PEAK VOLTAGES AND CREST FACTORS				
Monopolar powers	**EXCELL 400 MCDS**	**EXCELL 350 MCDS**	**EXCELL 250 MCDS**	**EXCELL 200 MCDS**
PC - Pure Cut	400 WRMS a 400 Ω 1530 Vpp CF 1.6	400 WRMS a 400 ohm 1530 Vpp CF 1.6	280 WRMS a 400 ohm 1530 Vpp CF 1.6	280 WRMS a 400 ohm 1530 Vpp CF 1.6
BC I - Blend Cut I	300 WRMS a 400 ohm 2050 Vpp CF 2.0	300 WRMS a 400 ohm 2050 Vpp CF 2.0	280 WRMS a 400 ohm 2050 Vpp CF 2.0	280 WRMS a 400 ohm 2050 Vpp CF 2.0
BC II - Blend Cut II	300 WRMS a 400 ohm 2500 Vpp CF 2.3	300 WRMS a 400 ohm 2500 Vpp CF 2.3	280 WRMS a 400 ohm 2500 Vpp CF 2.3	280 WRMS a 400 ohm 2500 Vpp CF 2.3
BC III - Blend Cut III	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1
PCS - Pin-Point Contact Soft coag	250 WRMS a 400 ohm 2800 Vpp CF 2.7	250 WRMS a 400 ohm 2800 Vpp CF 2.7	180 WRMS a 400 ohm 2800 Vpp CF 2.7	180 WRMS a 400 ohm 2800 Vpp CF 2.7
F - Fulguration coag	130 WRMS a 400 ohm 3900 Vpp CF 5.3	130 WRMS a 400 ohm 3900 Vpp CF 5.3	130 WRMS a 400 ohm 3750 Vpp CF 5.3	130 WRMS a 400 ohm 3750 Vpp CF 5.3
SPR - Spray coag	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1	120 WRMS a 400 ohm 7200 Vpp CF 7.1
A - Automatic coag	120 WRMS a 400 ohm 2650 Vpp CF 3.6	120 WRMS a 400 ohm 2650 Vpp CF 3.6	120 WRMS a 400 ohm 2650 Vpp CF 3.6	120 WRMS a 400 ohm 2650 Vpp CF 3.6
Bipolar powers				
PC - Pure Cut	99 WRMS a 400 ohm 800 Vpp CF 1.6		99 WRMS a 400 ohm 800 Vpp CF 1.6	
BC - Blend Cut	99 WRMS a 400 ohm 1050 Vpp CF 2.1		99 WRMS a 400 ohm 1050 Vpp CF 2.1	
MP - Micro Precise coag	80 WRMS a 100 ohm 400 Vpp CF 1.6	80 WRMS a 100 ohm 400 Vpp CF 1.6	60 WRMS a 100 ohm 380 Vpp CF 1.6	60 WRMS a 100 ohm 380 Vpp CF 1.6
MPA - Micro Precise Automatic coag	80 WRMS a 100 ohm 400 Vpp CF 1.6	80 WRMS a 100 ohm 400 Vpp CF 1.6	60 WRMS a 100 ohm 380 Vpp CF 1.6	60 WRMS a 100 ohm 380 Vpp CF 1.6
SM - Standard Macro coag	99 WRMS a 100 ohm 450 Vpp CF 1.8	99 WRMS a 100 ohm 450 Vpp CF 1.8	80 WRMS a 100 ohm 450 Vpp CF 1.8	80 WRMS a 100 ohm 450 Vpp CF 1.8